

In the Claims

1. (Currently amended) A joint exothermic catalyst stage (2, 3) ~~having~~ comprising at least one shift stage (2) for ~~the~~ catalytic conversion of a mixture of hydrogen, carbon monoxide and excess steam and ~~also~~ a fine purification stage (3) downstream of the shift stage (2) for ~~the~~ catalytic lowering of the residual carbon monoxide content of conversion products produced in the shift stage by selective methanization, wherein the shift stage (2) and the fine purification stage ~~is~~ are configured as a unitary hollow body.

2. (Currently amended) The exothermic catalyst stage as claimed in claim 1, wherein ~~at least one shift~~ a shift catalyst ~~which~~ for the shift stage comprises at least one metal on a first support comprising a metal oxide selected from the group consisting of the metals of groups IB and VIIIB of the Periodic Table of the Elements, rhenium and cadmium ~~is provided in the shift stage (2)~~ and mixtures thereof.

3. (Currently amended) The exothermic catalyst stage as claimed in claim 2, wherein the metal oxide ~~is~~ comprises cerium oxide ~~and/or zirconium oxide~~ or a combination thereof.

4. (Currently amended) The exothermic catalyst stage as claimed in claim 2 ~~or 3~~, wherein the shift catalyst ~~contains~~ further comprises at least one transition metal

promoter.

5. (Currently amended) The exothermic catalyst stage as claimed in ~~any of the preceding claims~~ claim 2, wherein ~~at least one~~ a methanization catalyst ~~which~~ for the fine purification stage comprises at least one metal which is able to form a metal carbonyl species on a second support ~~is provided in the fine purification stage~~.

6. (Currently amended) The exothermic catalyst stage as claimed in claim 5, wherein the metal for the methanization catalyst is selected from the group consisting of ruthenium, rhodium, platinum, palladium, rhenium, nickel, iron, cobalt, lead, tin, silver, iridium, gold, copper, manganese, zinc, zirconium, molybdenum and mixtures thereof.

7. (Currently amended) The exothermic catalyst stage as claimed in claim 5 ~~or 6~~, wherein the second support is selected from ~~among~~ the group consisting of a crystalline aluminosilicate, aluminum oxide, cerium oxide, titanium oxide and combinations thereof.

8. (Currently amended) The exothermic catalyst stage as claimed in ~~any of the preceding claims~~ claim 5, wherein the hollow body has a wall space for accommodating the shift catalyst and the methanization catalyst.

9. (Currently amended) The exothermic catalyst stage as claimed in ~~any of the preceding claims~~ claim 8, wherein the wall space has a cross-sectional thickness which is from

about 2 to 20% of ~~the~~ an external diameter of the hollow body.

10. (Currently amended) The exothermic catalyst stage as claimed in ~~either~~ claim 8 ~~or~~ 9, wherein flow channels are provided in the wall space.

11. (Original) The exothermic catalyst stage as claimed in claim 10, wherein perforations are provided between the flow channels.

12. (Currently amended) The exothermic catalyst stage as claimed in ~~either~~ claim 10 ~~or~~ 11, wherein the flow channels are arranged essentially parallel to ~~the~~ a longitudinal axis of the hollow body.

13. (Currently amended) The exothermic catalyst stage as claimed in ~~any of the preceding claims~~ claim 1, wherein the hollow body has at least one central flow channel (5).

14. (Currently amended) The exothermic catalyst stage as claimed in ~~any of the preceding claims, wherein the joint exothermic catalyst stage (2, 3) comprises~~ Claim 1 further comprising a flow feed housing (10) ~~which surrounds it on the outside of the hollow body, and~~ through which a cooling medium flows ~~in order to cool the catalyst stage.~~

15. (Currently amended) A process for producing a joint exothermic catalyst stage ~~as claimed in any of claims 1 to 14,~~ which comprises the steps:

(a) ~~provision of~~ providing a hollow body;

(b) dipping of the hollow body into a suspension of a first support comprising a metal oxide over a first part of ~~the~~ a length of the hollow body;

(c) fixing of the first support on the first part of the length of the hollow body so that a first coating is ~~obtained~~ produced;

(d) application of a metal to the first coating, with the metal being selected from the group consisting of the metals of groups IB and VIIIB of the Periodic Table of the Elements, rhenium and cadmium, and mixtures thereof; and

(e) application of a second support which comprises at least one metal which is able to form a metal carbonyl species to at least a part of the length of the hollow body which is not covered by the first coating.

16. (Currently amended) The process as claimed in claim 15, wherein the first coating is calcined after application of the metal ~~to the first coating~~.

17. (Currently amended) The process as claimed in claim 15 ~~or 16~~, wherein ~~a~~ calcination is carried out after application of the second support.

18. (Currently amended) An apparatus for producing hydrogen, which comprises:

(a) a heated steam reforming stage (1) ~~with~~ comprising a reforming catalyst to convert gaseous or vaporizable

hydrocarbons and water into hydrogen, carbon monoxide and further reformer products;

(b) at least one shift stage (2) downstream of the steam reforming stage for the catalytic conversion of the mixture of hydrogen, carbon monoxide and excess steam leaving the steam reforming stage; and

(c) a fine purification stage (3) downstream of the at least one shift stage (2) for the catalytic lowering of the residual carbon monoxide content of the conversion products by selective methanization,

wherein the shift stage (2) and the fine purification stage (3) ~~is~~ are configured as a joint exothermic catalyst stage (2, 3) ~~as claimed in any of claims 1 to 14.~~

19. (Currently amended) The apparatus as claimed in claim 18, wherein the heated steam reforming stage (1) is configured as a hollow body and comprises a burner (4) which is arranged centrally in the hollow ~~cylinder~~ body of the reforming stage.

20. (Currently amended) The apparatus as claimed in claim 18 ~~or 19~~, wherein at least one indirect heat exchanger (6) is provided between the joint exothermic catalyst stage (2, 3) and the steam reforming stage (1) and ~~the~~ water required for steam reforming is passed through it in countercurrent to the gaseous products coming from the

exothermic catalyst stage (2, 3).

21. (Currently amended) The apparatus as claimed in ~~any~~
~~of claims~~ claim 18 ~~to 20~~, wherein the apparatus comprises
only a single shift stage (2).

Discussion

The applicant has amended the claims of the translation of the PCT application to put them in condition for proper review by the United States Patent and Trademark Office. No new subject matter is introduced by any of the amendments to the claims.